

AAs2 Projected Time Table

	Study/Quizzes	Test
Unit 1	8/26-9/15	9/17
Unit 2	9/18-10/08	10/10
Unit 3	10/13-11/05	11/07
Unit 4	11/12-11/17	
Unit 5	11/18-1/09	1/12
Final		1/15

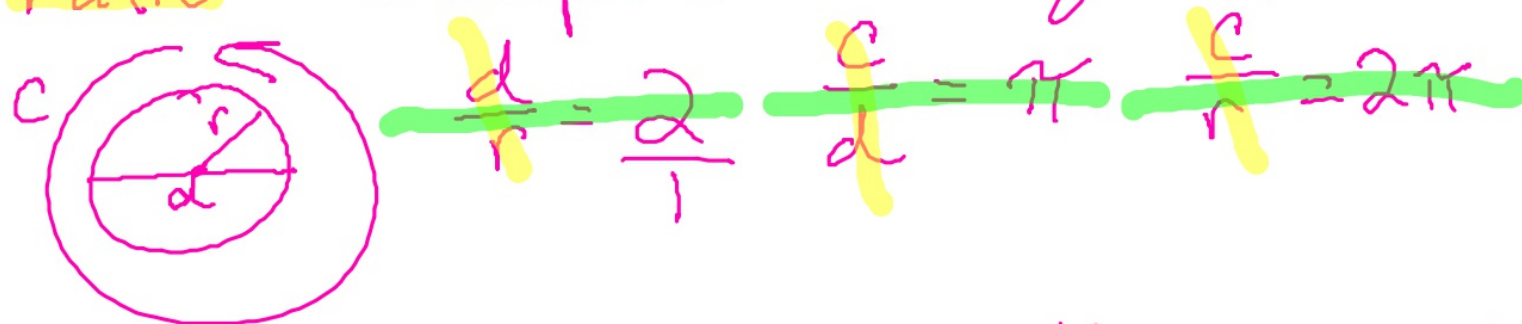
Unit 1: Rational Expressions and Equations

8/26/14

1.1 Proportions

Define rational expression, ratio, and proportion.

Ratio - a comparison of two quantities



Proportion - an equation that sets ratios equal to each other

Rational expression - algebraic expressions compared as a ratio

$$\frac{x+4}{7-x}$$

IWBAT use proportional reasoning to set up ratios and proportions to solve real-world problems and solve for the variable in a given proportion problem. I will capture my thinking using the math note catcher including teacher and student-team modeled example problems on the Promethean board. I will demonstrate my understanding on my exit ticket.

1.1 Proportions

8/26/14

$$\frac{12}{36} = \frac{15}{45} \rightarrow 540$$

$$\frac{2}{6} = \frac{3}{9}$$

$$\frac{1}{3} = \frac{1}{3}$$

$$\frac{9}{11} = \frac{x}{12}$$

$$\frac{11x}{11} = \frac{108}{11}$$

$$x = \frac{108}{11}$$

$$\frac{65}{x} = \frac{28}{41}$$

$$\frac{65 \times 41}{28} = x$$

$$\frac{x-3}{26} = \frac{8}{16}$$

$$\frac{13}{8(26)} = x - 3$$

$$\begin{array}{r} 13 = x - 3 \\ + 3 \quad + 3 \\ \hline 16 = x \end{array}$$

IWBAT use proportional reasoning to set up ratios and proportions to solve real-world problems and solve for the variable in a given proportion problem.

1.1 Proportions

8/26/14

You have an 8x10 picture. You want to make a poster which measures 36 inches long. How wide should the poster be so the picture is not distorted?

$$\frac{8}{10} = \frac{36}{x}$$

$$\frac{8}{10} = \frac{36}{45}$$

$$8 \setminus 8x = 360 / 8$$

$$x = 45$$



$$\frac{8}{10} = \frac{x}{36}$$

$$\frac{8 \times 36}{10} = x$$

$$\frac{288}{10} = 28.8$$

IWBAT use proportional reasoning to set up ratios and proportions to solve real-world problems and solve for the variable in a given proportion problem.

1.1 Proportions

8/27/14

If Jaree is 65 inches tall and casts a shadow 87 inches long, how tall is the flag pole if its shadow is 15 feet long?

$$\begin{array}{l} \text{height } 65 \\ \text{shadow } 87 \end{array} = \frac{x}{15(12)}$$

$$\begin{array}{l} \text{shadow} \\ 87 \end{array} = \frac{\begin{array}{l} \text{height} \\ 65 \end{array}}{15(12)} = \frac{x}{x}$$

$$\frac{65 \times 15 \times 12}{87} = x$$

$$X = 134.48 \text{ in}$$

$$X = 11.2 \text{ ft}$$

IWBAT use proportional reasoning to set up ratios and proportions to solve real-world problems and solve for the variable in a given proportion problem.

1.1 Proportions

8/27/14

BONUS (not a direct proportion like the previous):

If a brownie recipe calls for a 9x9 inch pan and makes brownies 1 inch thick, how thick should I expect the brownies to be if I bake them in an 8x8 inch pan?

$$V = L \times W \times h$$

$$9 \times 9 \times 1 = 8 \times 8 \times t$$

$$\frac{81}{64} = \frac{64t}{64}$$

$$1.2_{\text{in}} = t$$

IWBAT use proportional reasoning to set up ratios and proportions to solve real-world problems and solve for the variable in a given proportion problem.

Vocabulary 1.1.1 p. 22

Practice 1.1.2

Apex quiz 1.1.3

IWBAT use proportional reasoning to set up ratios and proportions to solve real-world problems and solve for the variable in a given proportion problem.

1.2 Rational Expressions

8/28/14

Solve for the variable in a proportion problem.

$$\frac{3}{7} = \frac{15}{x}$$

Handwritten work: $\frac{105}{3}$
 $x = 35$

$$\frac{6}{33} = \frac{x}{22}$$

Handwritten work: $\frac{132}{33} = 4 = x$

$$\frac{63}{x} = \frac{12}{19}$$

Handwritten work: $63 \times 19 \div 12$

Handwritten work: 99.75

1.2 Rational Expressions

8/28/14

Determine the value of a rational expression, given a specific input value.

Find the value of these expressions if $x = 5$.

$$A. \frac{x-3}{(x+6)(x-2)} \quad \frac{5-3}{(5+6)(5-2)} = \frac{2}{(11)(3)} = \frac{2}{33}$$

$$B. \frac{x^2-9}{x+3} \quad \frac{(5)^2-9}{5+3} = \frac{25-9}{8} = \frac{16}{8} = 2$$

$$C. \frac{x+2}{(x+5)(x-5)} \quad \frac{5+2}{(5+5)(5-5)} = \frac{7}{0} \text{ undefined}$$

IWBAT determine the value of the variable in a rational expression that makes the expression equal to zero or undefined. I will capture my thinking using the math note catcher including teacher and student-team modeled example problems on the Promethean board. I will demonstrate my understanding on my exit ticket.

1.2 Rational Expressions

8/28/14

When is a rational expression equal to zero?

When the numerator equals zero.

$$\frac{0}{n}$$

When is a rational expression undefined?

When the denominator equals zero.

$$\frac{n}{0}$$

IWBAT determine the value of the variable in a rational expression that makes the expression equal to zero or undefined.

1.2 Rational Expressions

8/28/14

For what values of x are these rational expressions equal to zero?

$$A. \frac{x+5}{x-3}$$

$$\begin{aligned} x+5 &= 0 \\ -5 & \quad -5 \\ x &= -5 \end{aligned}$$

$$B. \frac{x-7}{x+5}$$

$$\begin{aligned} 7-7 &= 0 \\ x &= 7 \end{aligned}$$

$$C. \frac{2x-6}{x^2-4}$$

$$x=3$$

$$D. \frac{x^2-4x+4}{x^2+3x-4}$$

$$\begin{aligned} x^2-4x+4 &= 0 \\ (x-2)(x-2) &= 0 \\ x-2 &= 0 \\ x &= 2 \end{aligned}$$

$$E. \frac{x^2-3x}{x^2+3x}$$

$$\begin{aligned} x^2-3x &= 0 \\ x^2-3x+0 &= 0 \\ (x-3)(x+0) &= 0 \end{aligned}$$

$x=3, 0$
 $x(x-3)$

IWBAT determine the value of the variable in a rational expression that makes the expression equal to zero or undefined.

1.2 Rational Expressions

8/28/14

For what values of x are these rational expressions undefined?

$$A. \frac{x+5}{x-3}$$

$$x=3$$

$$B. \frac{x-7}{x+5}$$

$$x=-5$$

$$C. \frac{2x-6}{x^2-4}$$

$$\begin{aligned} x^2-4 &= 0 \\ (x-2)(x+2) &= 0 \\ x &= 2, -2 \end{aligned}$$

$$D. \frac{x^2-4x+4}{x^2+3x-4}$$

$$(x+4)(x-1)=0$$

$$x=-4, 1$$

$$E. \frac{x^2-3x}{x^2+3x}$$

$$x^2+3x=0$$

$$x=0, -3$$

$$x(x+3)=0$$

IWBAT determine the value of the variable in a rational expression that makes the expression equal to zero or undefined.

1.2 Rational Expressions

8/28/14

Vocabulary 1.2.1 p. 13

Practice 1.2.2

Apex quiz 1.2.3

IWBAT determine the value of the variable in a rational expression that makes the expression equal to zero or undefined.

1.3 Simplifying Rational Expressions

8/29/14

Identify the value(s) that make these rational expressions equal to zero.

$$\frac{(x+6)(x-9)}{x+3}$$

$$x = -6, 9$$

$$\frac{x^2-9}{x+3}$$

$$x = 3, -3$$

$$\frac{x-2}{4x^2-16}$$

$$x = 2$$

$$(x+3)(x-3)$$

$$x^2 + \cancel{3x} - \cancel{3x} - 9$$

$$x^2 - 9$$

1.3 Simplifying Rational Expressions

8/29/14

Identify the value(s) that make these rational expressions undefined.

$$\frac{(x+6)(x-9)}{x+3}$$

$$x = -3$$

$$\frac{x^2-9}{x+3}$$

$$x = -3$$

$$\frac{x-2}{4x^2-16}$$

$$4(x^2-4)$$

$$4(x-2)(x+2)$$

$$x = 2, -2$$

1.3 Simplifying Rational Expressions

8/29/14

IWBAT simplify rational expressions. I will capture my thinking using the math note catcher including teacher and student-team modeled example problems on the Promethean board. I will demonstrate my understanding on my exit ticket.

1.3 Simplifying Rational Expressions

8/29/14

4 7

$$\frac{\cancel{28}^7}{72} \frac{7}{\cancel{18}_9}$$

$$\frac{13}{65} \frac{1}{5}$$

$$\frac{42}{26} \frac{\cancel{21}^7}{\cancel{13}_7}$$

$$\frac{49}{63} \frac{7}{9}$$

12.11

$$\frac{132}{156} \frac{11}{13}$$

$$\frac{5}{25x+5} \frac{1}{5x+1}$$

IWBAT simplify rational expressions.

1.3 Simplifying Rational Expressions

8/29/14

$$A. \frac{x^2 - 9}{x + 3}$$

$$\frac{(x-3)\cancel{(x+3)}^{\text{GCF}}}{\cancel{x+3}} = x-3$$

if $x \neq -3$

$$B. \frac{x-2}{4x^2-16}$$

$$\frac{\cancel{x-2}^{\text{GCF}}}{4(\cancel{x-2})(x+2)} = \frac{1}{4(x+2)}$$

when $x \neq 2, -2$

IWBAT simplify rational expressions.

1.3 Simplifying Rational Expressions

8/29/14

$$C. \frac{x^2+14x+45}{x^2+2x-15} \frac{(x+9)(x+5)^{\cancel{\text{GCF}}}}{(x-3)(x+5)} = \frac{x+9}{x-3} \quad \text{when } x \neq 3, -5$$

$$D. \frac{5x-10}{x^2+x-6} \frac{\cancel{5(x-2)}}{(x+3)\cancel{(x-2)}} = \frac{5}{x+3} \quad \text{when } x \neq -3, 2$$

IWBAT simplify rational expressions.

1.3 Simplifying Rational Expressions

8/29/14

Vocabulary 1.3.1 p. 11

Practice 1.3.2

Apex quiz 1.3.3

IWBAT simplify rational expressions.

1.4 Multiplying & Dividing Rational Expressions

09/02/14

Simplify these rational expressions.

$$\frac{x^2-16}{x+4}$$

$$\frac{(\cancel{x+4})(x-4)}{\cancel{x+4}}$$

$$x-4$$

$$x \neq -4$$

$$\frac{x^2+8x+16}{x+4}$$

$$\frac{(\cancel{x+4})(x+4)}{\cancel{x+4}}$$

$$x+4$$

$$\text{when } x \neq -4$$

$$\frac{x^2-9}{x^2-6x+9}$$

$$\frac{(\cancel{x-3})(x+3)}{(x-3)\cancel{(x-3)}}$$

$$\frac{x+3}{x-3}$$

$$\text{when } x \neq 3$$

1.4 Multiplying & Dividing Rational Expressions

09/02/14

Calculate the product of two rational expressions.

$$\frac{2}{7} * \frac{3}{16} \rightarrow \frac{\cancel{6}}{\cancel{112}} = \frac{3}{56} \quad \frac{\overset{1}{\cancel{2}}}{\underset{1}{\cancel{7}}} * \frac{\overset{1}{\cancel{7}}}{\underset{8}{\cancel{16}}} = \frac{14}{112} = \frac{1}{8}$$

$$\frac{1}{x} * \frac{2}{x+2} \quad \frac{2}{x^2+2x}$$

$$\frac{1}{\cancel{x}} * \frac{\cancel{x^2}}{x-2} = \frac{x^2}{x^2-2x} = \frac{\cancel{x} \cdot x}{\cancel{x}(x-2)}$$

$$\frac{x}{x-2}$$

1.4 Multiplying & Dividing Rational Expressions

09/02/14

Calculate the product of two rational expressions.

$$\frac{3x}{x+2} * \frac{x-1}{x-2} = \frac{3x^2-3x}{x^2-2x+2x-4} = \frac{3x^2-3x}{x^2-4}$$

$$\frac{\cancel{3}(x-1)}{x^2} * \frac{x+1}{\cancel{3}x} = \frac{x^2-1}{x^3}$$

1.4 Multiplying & Dividing Rational Expressions

09/02/14

IWBAT calculate the quotient of two rational expressions. I will capture my thinking using the math note catcher including teacher and student-team modeled example problems on the Promethean board. I will demonstrate my understanding on my exit ticket.

1.4 Multiplying & Dividing Rational Expressions

09/02/14

Calculate the quotient of two rational expressions.

$$\frac{2}{7} \div \frac{3}{16} = \frac{2}{7} \cdot \frac{16}{3} = \frac{32}{21}$$

$$\frac{1}{x} \div \frac{2}{x+2} = \frac{1}{x} \cdot \frac{x+2}{2} = \frac{x+2}{2x}$$

$$\frac{1}{x} \div \frac{x^2}{x-2} = \frac{1}{x} \cdot \frac{x-2}{x^2} = \frac{x-2}{x^3}$$

IWBAT calculate the quotient of two rational expressions.

1.4 Multiplying & Dividing Rational Expressions

09/02/14

Calculate the quotient of two rational expressions.

$$\frac{3x-3}{x^2} \div \frac{x+1}{3x} = \frac{3x-3}{x^2} \cdot \frac{3x}{x+1} = \frac{9x^2 - 9x}{x^3 + x^2}$$

$$\frac{6x}{x^2-16} \div \frac{x-2}{x+4} = \frac{6x}{\cancel{x^2-16}} \cdot \frac{\cancel{x+4}}{x-2} = \frac{6x}{(x-4)(x-2)} = \frac{6x}{x^2-6x+8}$$

$(\cancel{x+4})(x-4)$

IWBAT calculate the quotient of two rational expressions.

1.4 Multiplying & Dividing Rational Expressions 09/03/14

Calculate the quotient of two rational expressions.

$$\frac{3x}{x+4} \div \frac{x-2}{9x+1}$$

$$\frac{x^3-4}{x-1} \div \frac{x^5}{x^2+1}$$

IWBAT calculate the quotient of two rational expressions.

1.4 Multiplying & Dividing Rational Expressions

09/03/14

Vocabulary 1.4.1 p. 17

Practice 1.4.2

Apex quizzes 1.4.3 & 1.4.4

IWBAT calculate the quotient of two rational expressions.

1.5 Adding & Subtracting Rational Expressions

9/04/14

Calculate the product of two rational expressions.

$$\frac{x+4}{x-2} * \frac{\cancel{x-3}}{\cancel{x^2-9}} = \frac{x+4}{(x-2)(x+3)} = \frac{x+4}{x^2+x-6}$$

$(\cancel{x-3})(x+3)$

Calculate the quotient of two rational expressions.

$$\frac{x-4}{x+5} \div \frac{x-3}{x-6} = \frac{x-4}{x+5} \cdot \frac{x-6}{x-3} = \frac{x^2-10x+24}{x^2+2x-15}$$

$+5x-3x$

1.5 Adding & Subtracting Rational Expressions

9/04/14

Calculate the sum or difference of numerical fractions.

$$\frac{\cancel{3} \cdot 2}{\cancel{3} \cdot 3} + \frac{8}{9} + \frac{6}{9} = \frac{14}{9}$$

$$\frac{8}{9} - \frac{\cancel{2} \cdot \cancel{3} \cdot 6}{\cancel{3} \cdot \cancel{3} \cdot 9} = \frac{2}{9}$$

$$\frac{1 \cdot \cancel{7}}{5 \cdot \cancel{7}} + \frac{2 \cdot \cancel{5}}{7 \cdot \cancel{5}} = \frac{7}{35} + \frac{10}{35} = \frac{17}{35}$$

$$\frac{3}{5} - \frac{3}{7}$$

$$\frac{21}{11} + \frac{1}{4}$$

$$\frac{21}{11} - \frac{4}{5}$$

1.5 Adding & Subtracting Rational Expressions

9/04/14

IWBAT determine the least common denominator of rational expressions, calculate the sum of rational expressions, and calculate the difference of rational expressions. I will capture my thinking using the math note catcher including teacher and student-team modeled example problems on the Promethean board. I will demonstrate my understanding on my exit ticket.

1.5 Adding & Subtracting Rational Expressions

9/04/14

What is the common denominator for each expression?

$$\frac{x-2}{x+3} + \frac{x+1}{x+3} \quad \underline{x+3}$$

$$\frac{x+1}{x-5} + \frac{x+1}{x-3} \quad \underline{(x-5)(x-3)}$$

$$\frac{x-2}{x+5} + \frac{x+6}{2x^2+10x}$$

$2x(x+5)$

$$2x(x+5)$$

$$\frac{5}{6x^2} + \frac{3x}{3x^3+6x^2+3x}$$

$2 \cdot 3 \cdot x \cdot x$ $3x(x^2+2x+1)$

$3x(x+1)(x+1)$

$$2 \times 3x(x+1)^2$$

IWBAT determine the least common denominator of rational expressions, calculate the sum of rational expressions, and calculate the difference of rational expressions.

1.5 Adding & Subtracting Rational Expressions

9/04/14

Find the sum.

$$\frac{x-2}{x+3} + \frac{x+1}{x+3} = \frac{2x-1}{x+3}$$

$$\frac{(x-3)\frac{x+1}{x-5} + \frac{x+1(x-5)}{x-3}}{(x-5)(x-3)} = \frac{(x-3)(x+1) + (x+1)(x-5)}{(x-5)(x-3)}$$

$$\frac{(x^2 - 2x - 3) + (x^2 - 4x - 5)}{(x-5)(x-3)} = \frac{2x^2 - 6x - 8}{(x-5)(x-3)}$$

IWBAT determine the least common denominator of rational expressions, calculate the sum of rational expressions, and calculate the difference of rational expressions.

1.5 Adding & Subtracting Rational Expressions

9/04/14

Find the sum.

$$\frac{2x(x-2)}{2x(x+5)} + \frac{x+6}{2x^2+10x} = \frac{(2x^2-4x)+(x+6)}{2x(x+5)} = \frac{2x^2-3x+6}{2x^2+10x}$$

$$\frac{(x+1)^2 5}{(x+1)^2 6x^2} + \frac{3x}{3x^3+6x^2+3x} \frac{(2x)}{(2x)} = \frac{5(x^2+2x+1) + 6x^2}{2x(3x^3+6x^2+3x)}$$

$$\frac{5x^2+10x+5+6x^2}{2x(3x^3+6x^2+3x)} = \frac{11x^2+10x+5}{2x(3x^3+6x^2+3x)}$$

IWBAT determine the least common denominator of rational expressions, calculate the sum of rational expressions, and calculate the difference of rational expressions.

1.5 Adding & Subtracting Rational Expressions

9/04/14

Find the difference.

$$\frac{x-2}{x+3} - \frac{x+1}{x+3} = \frac{(x-x)+(-2-+1)}{x+3} = \frac{0x-3}{x+3} = \frac{-3}{x+3}$$

$$\frac{(x-3)(x+1)}{x-5} - \frac{(x+1)(x-5)}{x-3} = \frac{(x^2-2x-3)-(x^2-4x-5)}{(x-5)(x-3)} = \frac{2x+2}{(x-5)(x-3)}$$

IWBAT determine the least common denominator of rational expressions, calculate the sum of rational expressions, and calculate the difference of rational expressions.

1.5 Adding & Subtracting Rational Expressions

9/04/14

Find the difference.

$$\frac{x-2}{x+5} - \frac{x+6}{2x^2+10x} = \frac{(2x^2-4x) - (x+6)}{2x^2+10x} = \frac{2x^2-5x-6}{2x^2+10x}$$

$$\frac{(x+1)^2}{(x+1)^2} \cdot \frac{5}{6x^2} - \frac{3x}{3x^3+6x^2+3x} \cdot \frac{2x}{2x} = \frac{5x^3+10x+5-6x^2}{2x(3x^3+6x^2+3x)} - \frac{x^2+10x+5}{2x(3x^3+6x^2+3x)}$$

IWBAT determine the least common denominator of rational expressions, calculate the sum of rational expressions, and calculate the difference of rational expressions.

1.5 Adding & Subtracting Rational Expressions

9/04/14

Vocabulary 1.5.1 p. 13

Practice 1.5.2

Apex quiz 1.5.3

IWBAT determine the least common denominator of rational expressions, calculate the sum of rational expressions, and calculate the difference of rational expressions.

1.5 Adding & Subtracting Rational Expressions

3/26/14

Find the sum.

$$\frac{2x+1}{x+2} + \frac{x-5}{3x+6}$$

Find the difference.

$$\frac{6x}{6x-18} - \frac{2x+6}{x^2-9}$$

IWBAT determine the least common denominator of rational expressions, calculate the sum of rational expressions, and calculate the difference of rational expressions.

1.5 Adding & Subtracting Rational Expressions

3/26/14

Vocabulary 1.5.1 p. 13

Practice 1.5.2

Apex quiz 1.5.3

IWBAT determine the least common denominator of rational expressions, calculate the sum of rational expressions, and calculate the difference of rational expressions.

1.6 Inverse variation

9/08/14

Find the sum.

$$\frac{6x}{6x-18} + \frac{2x+6}{x^2-9} = \frac{\cancel{6}x}{\cancel{6}(x-3)} + \frac{2\cancel{(x+3)}}{\cancel{(x+3)}(x-3)}$$
$$\frac{x}{x-3} + \frac{2}{x-3} = \frac{x+2}{x-3}$$

Find the difference.

$$\frac{\overset{3}{\cancel{3}}(2x+1)}{\overset{3}{\cancel{3}}(x+2)} - \frac{x-5}{3x+6}$$
$$\frac{5x+8}{3(x+2)}$$

$$\frac{\cancel{6}x+3}{\cancel{3}(x+2)} - \frac{x-5}{\cancel{3}(x+2)}$$

$$\begin{array}{r} \cancel{6}x+3 - \cancel{1}(x-5) \\ \hline \cancel{6}x+3 - x+5 \end{array}$$

1.6 Inverse variation

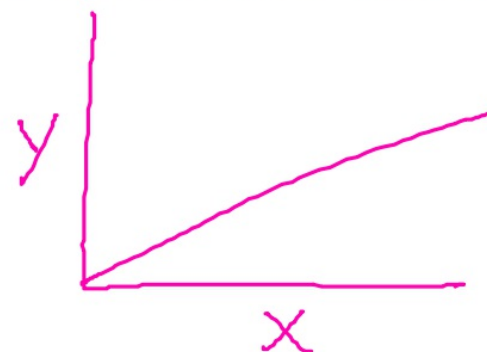
9/08/14

Identify equations that represent direct or inverse variation.

Direct variation

$x \uparrow y \uparrow$
 $x \downarrow y \downarrow$

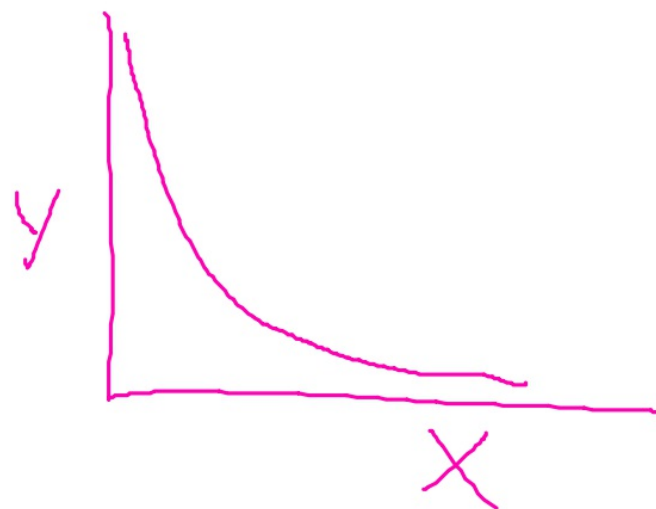
Straight



Inverse variation

$x \uparrow y \downarrow$
 $x \downarrow y \uparrow$

Curved



1.6 Inverse variation

9/08/14

Identify equations that represent direct or inverse variation.

Direct variation

$$T = 3tsp$$

$$F = ma$$

$$A = l * w$$

$$T = 3tsp$$

$$F = ma$$

$$y = \frac{1}{x}$$

$$a = \frac{v}{t}$$

$$v = \frac{d}{t}$$

$$A = l * w$$

Inverse variation

$$y = \frac{1}{x}$$

$$a = \frac{v}{t}$$

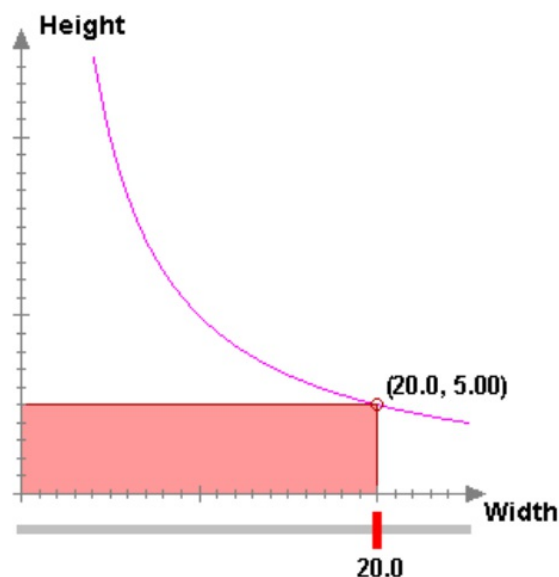
$$v = \frac{d}{t}$$

IWBAT determine whether the given graph is the graph of the dimensions of a rectangle whose adjacent side lengths exhibit inverse, direct, or no variation and given the graph of an equation that follows direct or inverse variation, find the constant in the equation. I will capture my thinking using the math note catcher including teacher and student-team modeled example problems on the Promethean board. I will demonstrate my understanding on my exit ticket.

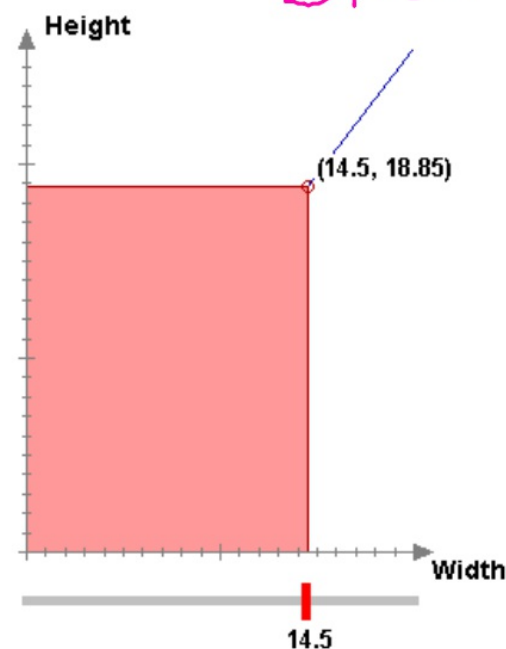
1.6 Inverse variation

9/08/14

Inverse



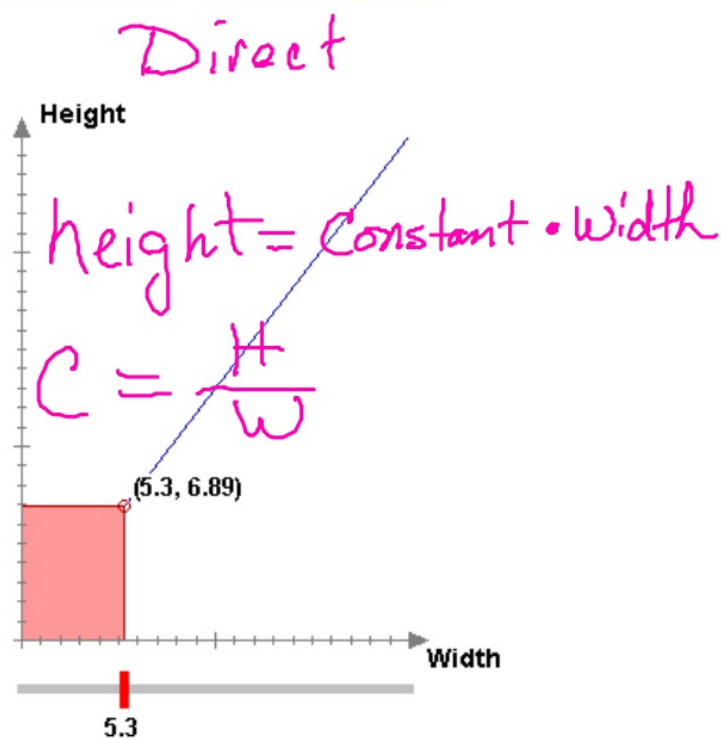
Direct



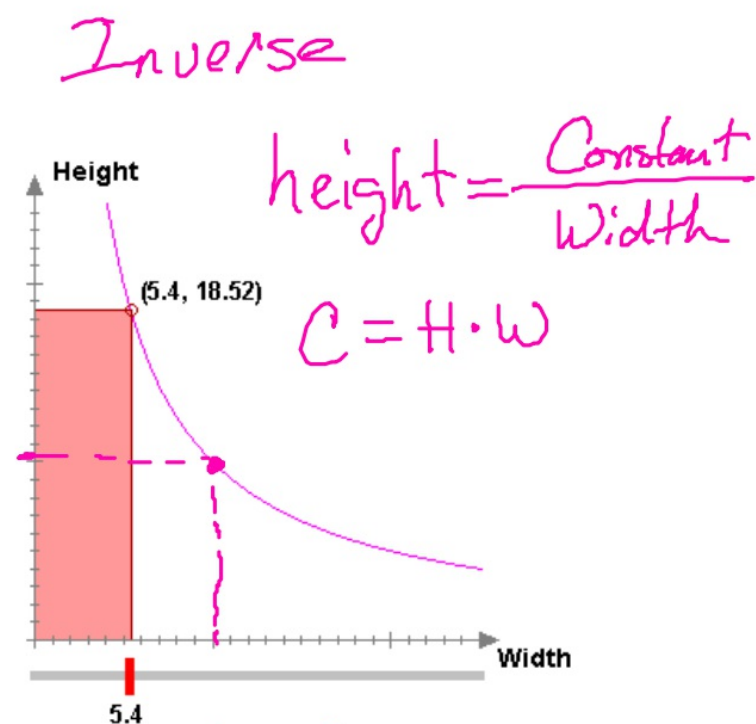
IWBAT determine whether the given graph is the graph of the dimensions of a rectangle whose adjacent side lengths exhibit inverse, direct, or no variation and given the graph of an equation that follows direct or inverse variation, find the constant in the equation.

1.6 Inverse variation

9/08/14



$$A = L \cdot W$$



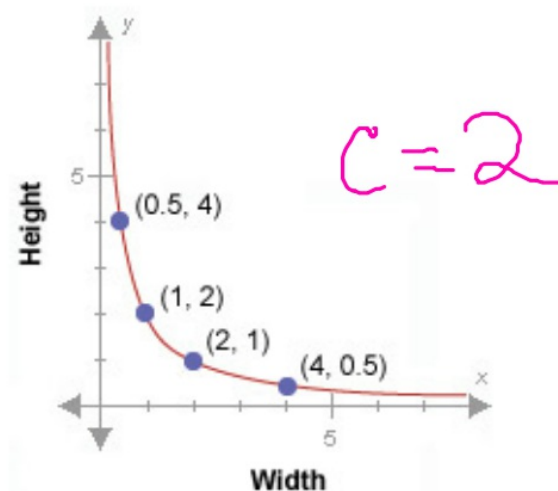
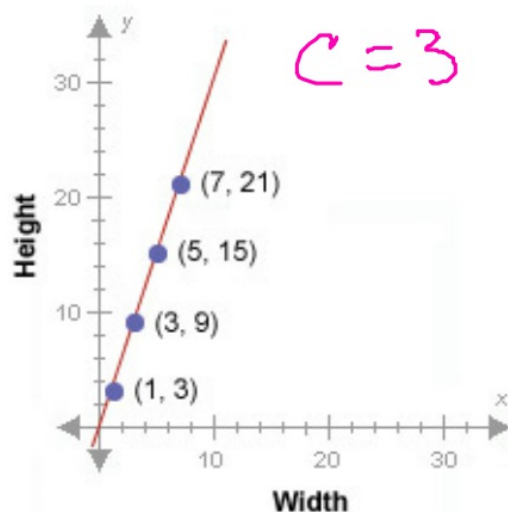
$$A = L \cdot W$$

IWBAT determine whether the given graph is the graph of the dimensions of a rectangle whose adjacent side lengths exhibit inverse, direct, or no variation and given the graph of an equation that follows direct or inverse variation, find the constant in the equation.

1.6 Inverse variation

9/08/14

Find the constant of variation.



IWBAT determine whether the given graph is the graph of the dimensions of a rectangle whose adjacent side lengths exhibit inverse, direct, or no variation and given the graph of an equation that follows direct or inverse variation, find the constant in the equation.

Vocabulary 1.7.1 p. 20

Practice 1.7.2

Apex quiz 1.7.3

IWBAT determine whether the given graph is the graph of the dimensions of a rectangle whose adjacent side lengths exhibit inverse, direct, or no variation and given the graph of an equation that follows direct or inverse variation, find the constant in the equation.

1.7 Rational Functions

9/09/14

Identify equations that represent direct or inverse variation.

Direct variation

$$T = 3tsp$$

$$F = ma$$

$$A = l * w$$

$$H = \frac{w}{c} = \frac{1}{c} w$$

$$T = 3tsp$$

$$F = ma$$

$$y = \frac{1}{x}$$

$$A = l * w$$

$$H = \frac{c}{w}$$

Inverse variation

$$H = \frac{c}{w} = c \frac{1}{w}$$

$$y = \frac{1}{x}$$

1.7 Rational Functions

9/09/14

Determine if a given function is a rational function.

A rational function is a function whose equation contains a rational expression.

Rational
Expression

$$F(x) = \frac{x}{5}$$

$$G(x) = \frac{x}{x-2}$$

$$H(x) = \frac{3}{x^2-9}$$

$$F(x) = \frac{x}{5}$$

$$G(x) = \frac{x}{x-2}$$

$$H(x) = \frac{3}{x^2-9}$$

Not a Rational
Expression

$$J(x) = \frac{3}{4}$$

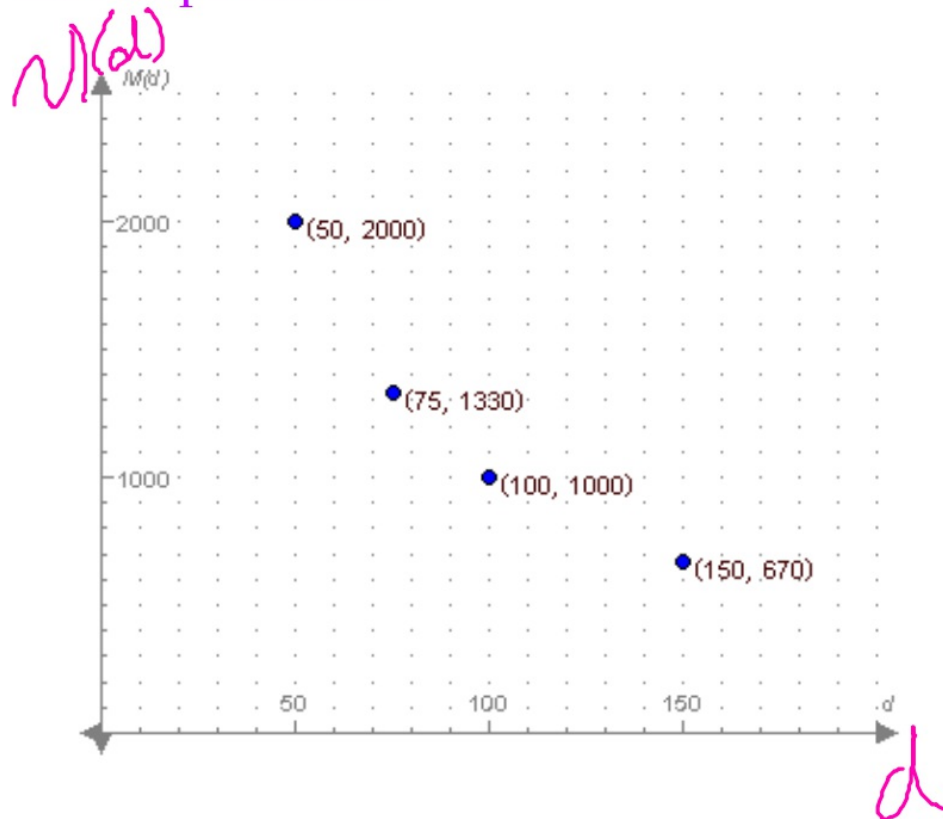
$$J(x) = \frac{3}{4}$$

IWBAT given the graph of a rational function, describe its output values at different input values, determine the restrictions on domain and range of a rational function, given its graph, and identify the horizontal and vertical asymptotes of a rational function, given its graph. I will capture my thinking using the math note catcher including teacher and student-team modeled example problems on the Promethean board. I will demonstrate my understanding on my exit ticket.

1.7 Rational Functions

9/09/14

Lever problem



Inverse variation

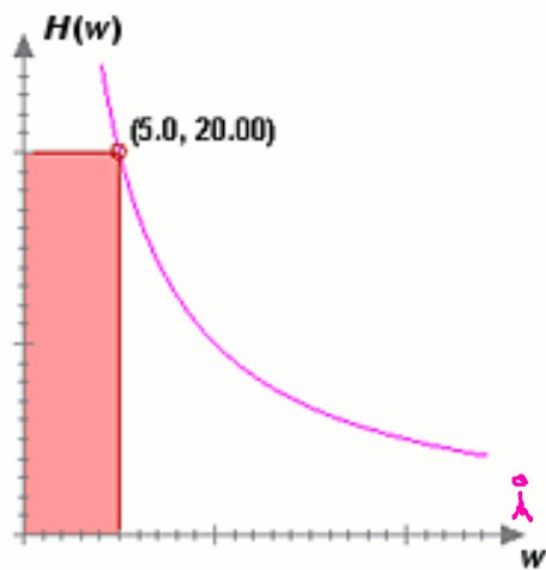
$$M(d) = \frac{100,000}{d}$$

$$C = M(d) \cdot d$$

IWBAT given the graph of a rational function, describe its output values at different input values, determine the restrictions on domain and range of a rational function, given its graph, and identify the horizontal and vertical asymptotes of a rational function, given its graph.

1.7 Rational Functions

9/09/14



What is the equation of the function shown here?

$$H(w) = \frac{100}{w}$$

What restrictions are on the function shown here?

$$w > 0$$

$$H(w) > 0$$

as w approaches 0,
 $H(w)$ gets larger

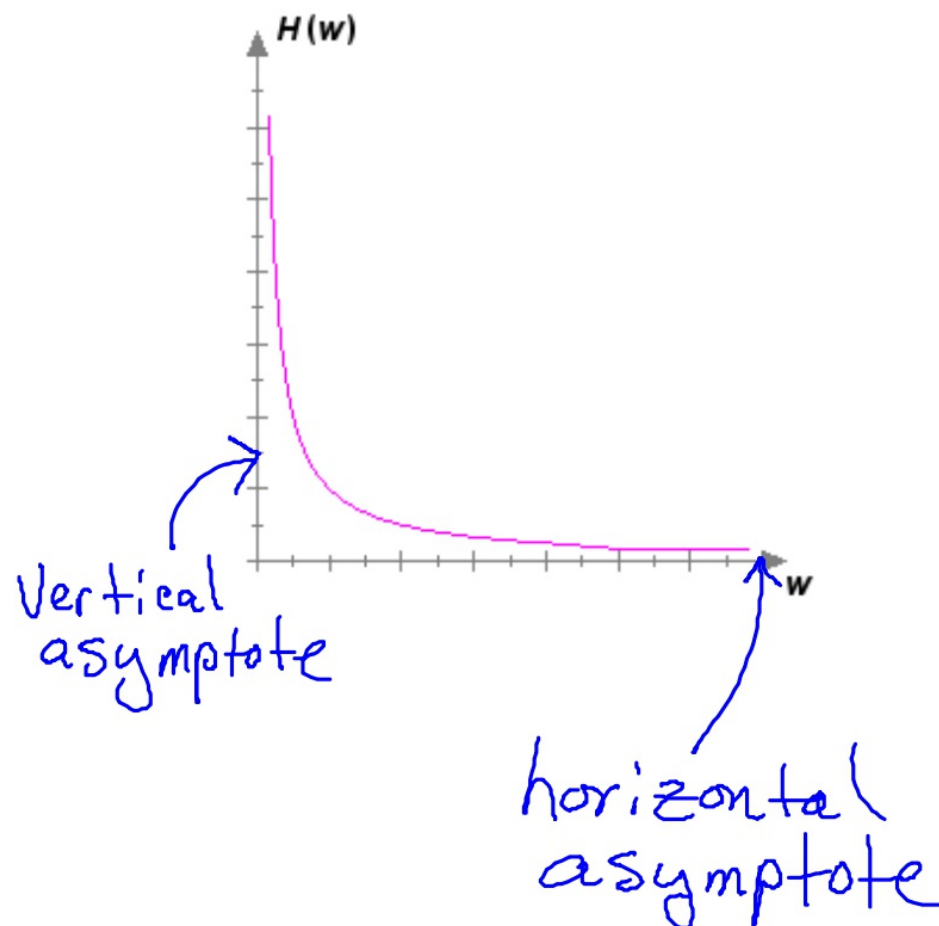
as w gets very large,
 $H(w)$ approaches 0

IWBAT given the graph of a rational function, describe its output values at different input values, determine the restrictions on domain and range of a rational function, given its graph, and identify the horizontal and vertical asymptotes of a rational function, given its graph.

1.7 Rational Functions

9/09/14

What can you tell me about this function?



Inverse variation
 $w > 0, H(w) > 0$
as $H(w)$ gets larger,
 w gets smaller

$$H(w) = \frac{\text{constant}}{w}$$

IWBAT given the graph of a rational function, describe its output values at different input values, determine the restrictions on domain and range of a rational function, given its graph, and identify the horizontal and vertical asymptotes of a rational function, given its graph.

Vocabulary 1.8.1 p. 19

Practice 1.8.2

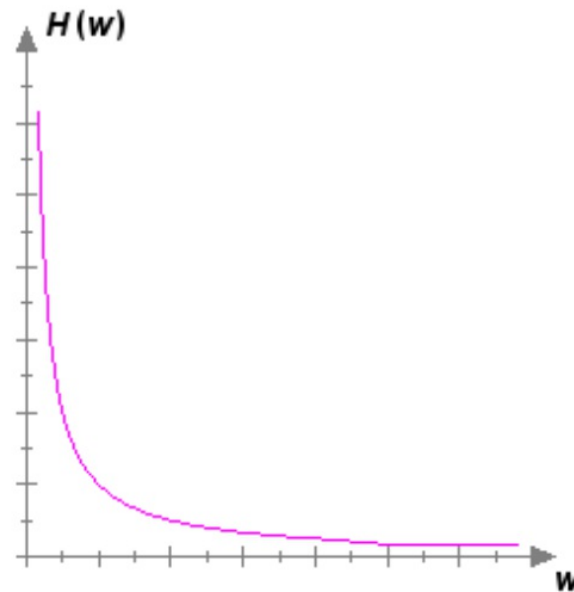
Apex quiz 1.8.3

IWBAT given the graph of a rational function, describe its output values at different input values, determine the restrictions on domain and range of a rational function, given its graph, and identify the horizontal and vertical asymptotes of a rational function, given its graph.

1.8 Vertical Asymptotes

9/10/14

Determine the restrictions on domain and range of a rational function given its graph.



$$w > 0$$
$$H(w) > 0$$

1.8 Vertical Asymptotes

9/10/14

Define vertical asymptote.

a line that runs up and down that our graph will never touch because it becomes undefined at that point

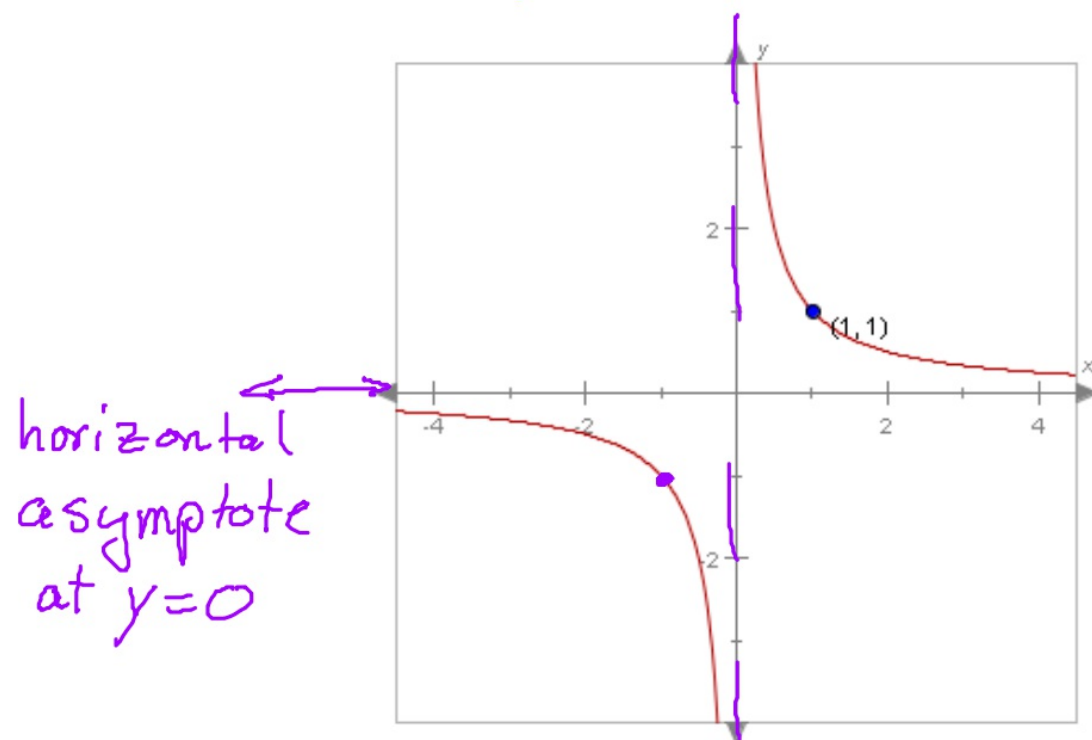
$$B(x) = \frac{2}{x} \quad \text{Vertical asymptote at } x=0$$

IWBAT determine the number of asymptotes a given rational function has, as well as the value(s) of x for which the given function has an asymptote, and identify the rational function that corresponds to a given graph. I will capture my thinking using the math note catcher including teacher and student-team modeled example problems on the Promethean board. I will demonstrate my understanding on my exit ticket.

1.8 Vertical Asymptotes

9/10/14

$$y = \frac{1}{x} \quad \begin{array}{c} \text{Zeros} \\ \hline \text{Undefined} \end{array}$$



Vertical
asymptote
at $x = 0$

IWBAT determine the number of asymptotes a given rational function has, as well as the value(s) of x for which the given function has an asymptote, and identify the rational function that corresponds to a given graph.

1.8 Vertical Asymptotes

9/10/14

What are the vertical asymptotes for each of these functions?

$$F(x) = \frac{1}{3x} \quad \frac{1}{3(0)} = \frac{1}{0} \text{ und.} \quad G(x) = \frac{x}{x+2}$$

$\text{at } x=0$ $\text{at } x=-2$

$$H(x) = \frac{3(x+2)}{(x-5)^2} \quad J(x) = \frac{x+4}{x^2-9}$$

$(x-5)(x-5)$ $(x+3)(x-3)$

5 $-3 \text{ and } 3$

IWBAT determine the number of asymptotes a given rational function has, as well as the value(s) of x for which the given function has an asymptote, and identify the rational function that corresponds to a given graph.

1.8 Vertical Asymptotes

9/10/14

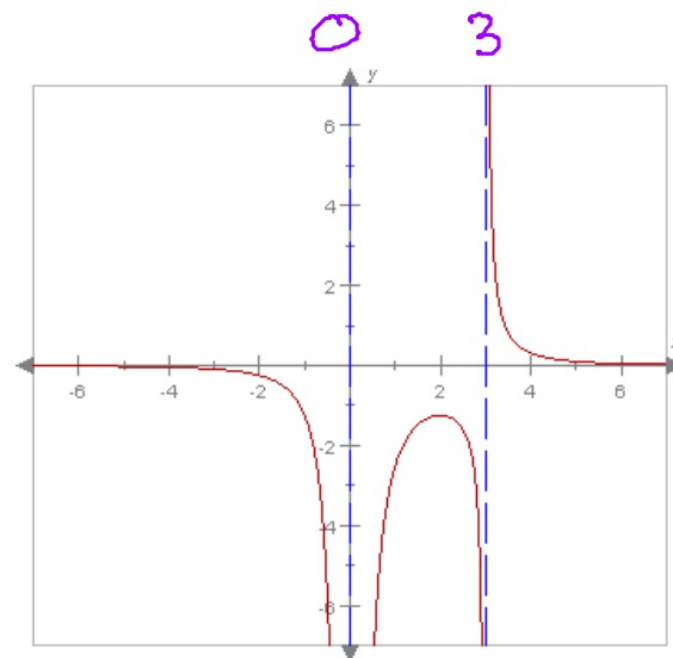
What are the vertical asymptotes for each of these functions?

$$C(x) = \frac{3}{x(x+6)}$$

two 0, -6

$$D(x) = \frac{x}{2x(x+2)(x-3)(x-7)}$$

four 0, -2, +3, +7



$$\frac{1}{x(x-3)}$$

IWBAT determine the number of asymptotes a given rational function has, as well as the value(s) of x for which the given function has an asymptote, and identify the rational function that corresponds to a given graph.

1.8 Vertical Asymptotes

9/10/14

Vocabulary 1.9.1 p. 20

Practice 1.9.2

Apex quizzes 1.9.3 & 1.9.4

IWBAT determine the number of asymptotes a given rational function has, as well as the value(s) of x for which the given function has an asymptote, and identify the rational function that corresponds to a given graph.

1.9 Graphing Rational Functions

9/11/14

Determine the number of asymptotes a given rational function has, as well as the value(s) of x for which the given function has an asymptote.

$$A(x) = \frac{x-2}{x+3}$$

one
at $x=2$

one

at $x=-3$

$$B(x) = \frac{3x+6}{x(3x+3)(x-5)}$$

one
at $x=-2$

three

at $x=0, 5, -1$

$$3x+3=0$$

$$\frac{-3}{-3} \quad \frac{-3}{-3}$$

$$\frac{3x}{3} = \frac{-3}{3}$$

$$x = -1$$

1.9 Graphing Rational Functions

9/11/14

Identify the zeros, vertical asymptotes, and singular points of a rational function.

$$C(x) = \frac{3}{x(x+6)}$$

Zeros none

V. asym. $x=0, -6$

Singular points none

$$D(x) = \frac{x}{2x(x+2)(x-3)(x-7)}$$

none

$x=-2, +3, +7$

one, $x=0$

1.9 Graphing Rational Functions

9/11/14

Identify the zeros, vertical asymptotes, and singular points of a rational function.

$$F(x) = \frac{(x+1)(x-2)}{(x-3)(x+1)(x+6)}$$

Zeros 1 $x=2$

V. asym. Two $x=3, -6$

S. points 1 $x=-1$

$$G(x) = \frac{x^2 - 3x}{x^3 - 9x} = \frac{x(x-3)}{x(x^2-9)} \\ \text{none} = \frac{x(x-3)}{x(x+3)(x-3)}$$

$x=-3$

two $x=0, +3$

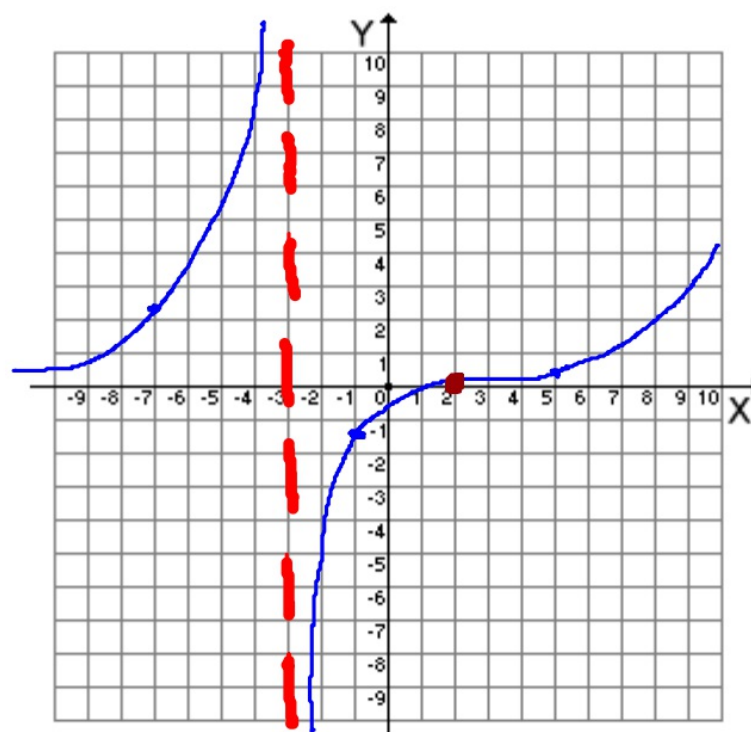
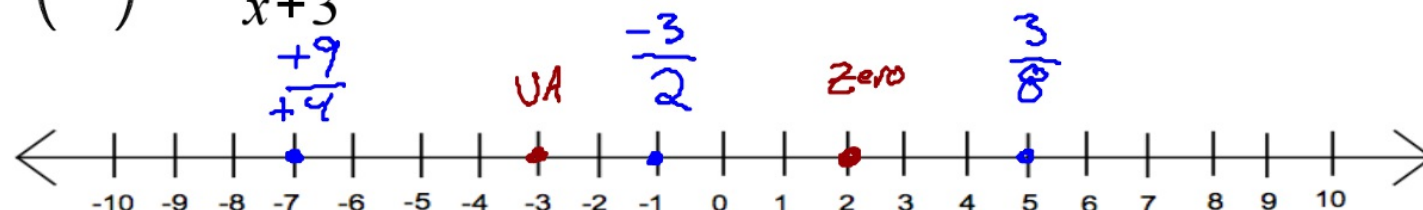
IWBAT identify the information a sign chart provides when sketching a graph, identify the steps used to sketch the graph of a rational function, and identify the rational function that corresponds to a given graph. I will capture my thinking using the math note catcher including teacher and student-team modeled example problems on the Promethean board. I will demonstrate my understanding on my exit ticket.

1.9 Graphing Rational Functions

9/11/14

Create a sign chart to help in graphing this function.

$$A(x) = \frac{x-2}{x+3}$$



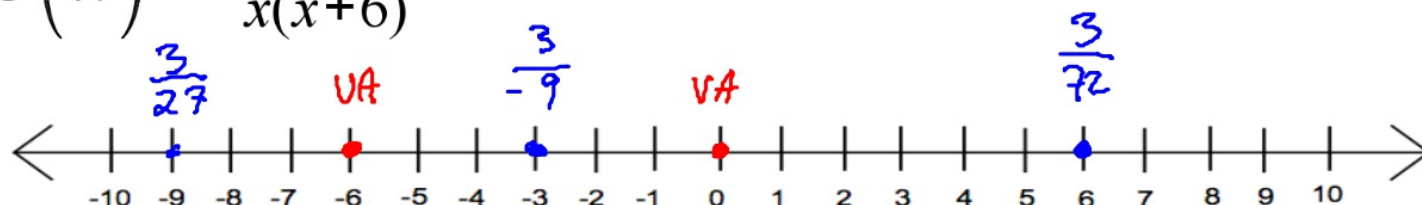
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1.9 Graphing Rational Functions

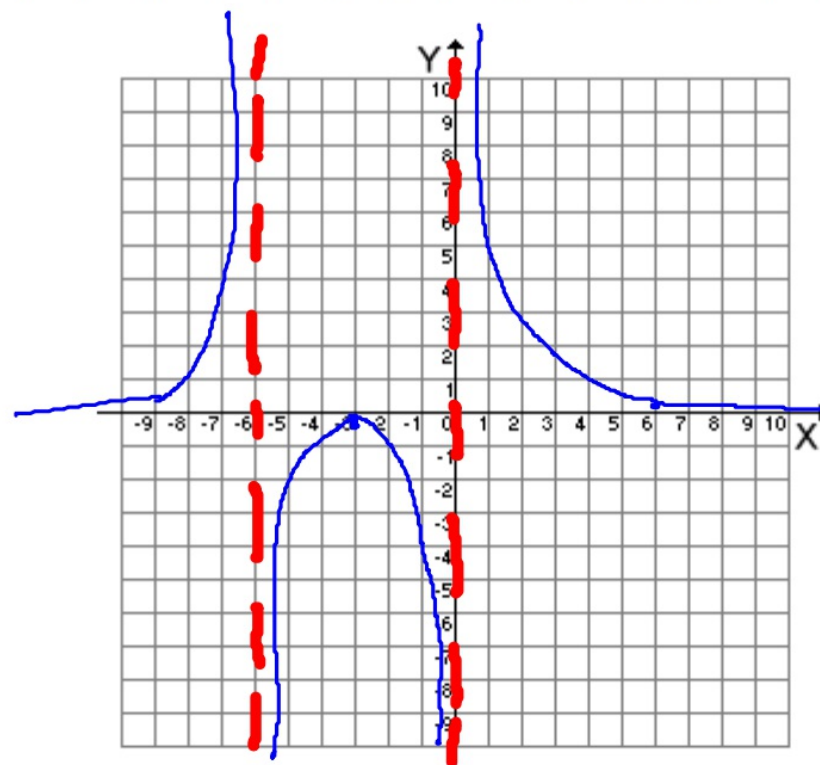
9/11/14

Create a sign chart to help in graphing this function.

$$C(x) = \frac{3}{x(x+6)}$$



find
Choose
Use
Sketch



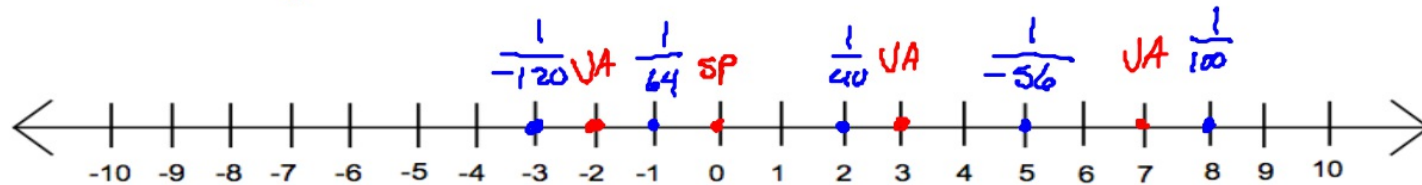
IWBAT identify the information a sign chart provides when sketching a graph, identify the steps used to sketch the graph of a rational function, and identify the rational function that corresponds to a given graph.

1.9 Graphing Rational Functions

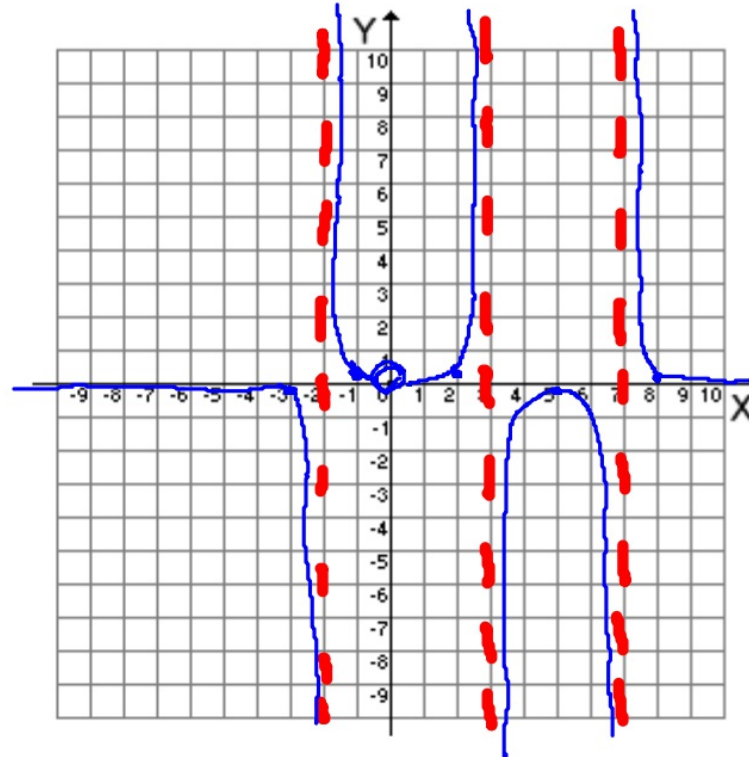
9/12/14

Create a sign chart to help in graphing this function.

$$D(x) = \frac{x}{2x(x+2)(x-3)(x-7)}$$



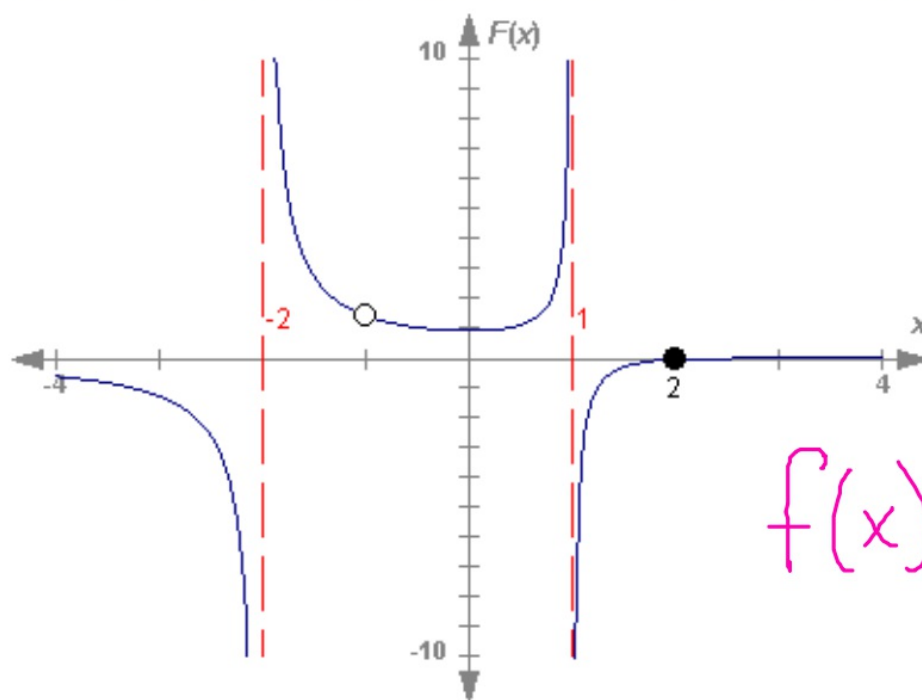
Find
Choose
Use
Sketch



1.9 Graphing Rational Functions

9/12/14

Derive the equation for the function graphed here.



$$VA \quad x = -2, 1$$

$$Z \quad x = 2$$

$$SP \quad x = -1$$

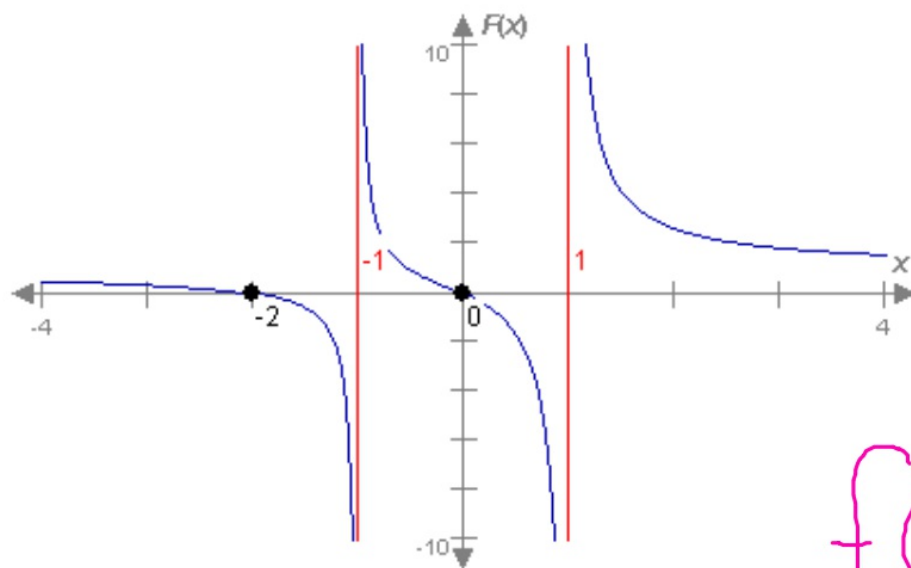
$$f(x) = \frac{(x+1)(x-2)}{(x+1)(x+2)(x-1)}$$

IWBAT identify the information a sign chart provides when sketching a graph, identify the steps used to sketch the graph of a rational function, and identify the rational function that corresponds to a given graph.

1.9 Graphing Rational Functions

9/12/14

Derive the equation for the function graphed here.



$$Z: 0, -2$$

$$VA: -1, 1$$

$$SP: \text{NONE}$$

$$f(x) = \frac{x(x+2)}{(x+1)(x-1)}$$

IWBAT identify the information a sign chart provides when sketching a graph, identify the steps used to sketch the graph of a rational function, and identify the rational function that corresponds to a given graph.

1.9 Graphing Rational Functions

9/12/14

Vocabulary 1.10.1 p. 25

Practice 1.10.2

Apex quizzes 1.10.3

IWBAT identify the information a sign chart provides when sketching a graph, identify the steps used to sketch the graph of a rational function, and identify the rational function that corresponds to a given graph.

1.10 Unit Exam Review

9/15/14

Identify the zeros, vertical asymptotes, and singular points of a rational function.

$$H(x) = \frac{x(x+6)(x-9)}{3x(x^2-25)}$$

Zeros two $x = -6, 9$

V. Asym. two $x = -5, 5$

S. points one $x = 0$

$$(x+5)(x-5)$$

VA

Zeros • Singular points ○

1.10 Unit Exam Review

9/15/14

1.10.1 Practice Problems

$$\frac{5}{x} = \frac{12}{7}$$

$$5 \cdot 7 = 35$$

$$12 \cdot x = 12x$$

$$\frac{12x}{12} = \frac{35}{12}$$

$$x = \frac{35}{12}$$

Zeros
V. asym.

SP
SP

$$\frac{x}{0} = \text{undefined}$$

1.10 Unit Exam Review

9/15/14

$$\begin{array}{c} x+1 \\ y+1 \end{array} \frac{3}{4x} + \frac{2}{x+1} \begin{array}{c} 4x \\ 4x \end{array} = \frac{3x+3+8x}{4x^2+4x} = \frac{11x+3}{4x^2+4x}$$

common denominator

$$\frac{3}{x-4} \cdot \frac{5}{x+3} = \frac{15}{x^2 - 1x - 12}$$

$\begin{array}{r} -4x \\ +3x \\ \hline -1x \end{array}$

Commutative

